STATEMENT OF BASIS (AI No. 32739)

for draft Louisiana Pollutant Discharge Elimination System permit No. LA0002780 to discharge to waters of the State of Louisiana.

THE APPLICANT IS: PQ Corporation
Pineville Plant
4000 Pardue Road
Ball, LA 71405

ISSUING OFFICE: Louisiana Department of Environmental Quality (LDEQ)
Office of Environmental Services
Post Office Box 4313
Baton Rouge, Louisiana 70821-4313

PREPARED BY: Jenniffer Sheppard
Water and Waste Permits Division
Phone: 225-219-3135
e-mail: jenniffer.sheppard@la.gov

DATE PREPARED: November 1, 2005

1. PERMIT STATUS

A. Reason For Permit Action:

Issuance of an expired Louisiana Pollutant Discharge Elimination System (LPDES) permit for a 5-year term.

B. NPDES permit - NPDES permit effective date: October 24, 1993
NPDES permit expiration date: October 23, 1998

EPA has not retained enforcement authority.

C. LPDES permit - LPDES permit effective date: N/A
LPDES permit expiration date: N/A

D. Date Application Received: August 11, 2004. Addendum received on February 3, 2006.

2. FACILITY INFORMATION

A. FACILITY TYPE/ACTIVITY - sodium silicate manufacturing facility

According to the permit application, PQ Corporation is an inorganic chemical manufacturer that produces sodium silicate from high purity silica sand and soda ash. The sand and soda ash are fed into the furnace which operates at approximately 2450 °F and melted to produce sodium silicate. The discharges include process wastewater, process area stormwater, and wash out water from Outfall 002.

Former LPDES permit was discontinued at the request of PQ Corporation (former Power Silicates), due to the rerouting of their wastewater to the City of Pineville.

Currently, the facility discharges are routed to the City of Pineville's Municipal Sewage Treatment Plant and covered under LPDES permit, LA0033464. This proposed permit will cover discharges from PQ Corporation in the event that the City of Pineville can not accept the discharge due to internal operational or capacity issues.

Stormwater discharges from PQ Corporation are covered under the Multi-Sector General Permit, LAR05M520, effective on June 19, 2001.

B. TECHNOLOGY BASIS

Technology Basis - (40 CFR Chapter 1, Subchapter N/Parts 401-402, and 404-471 have been adopted by reference at LAC 33:IX.4903)

Guideline	Reference
Inorganic Chemicals	
Sodium Silicate	40 CFR 415 (Subpart S [Reserved])

According to the Inorganic Chemical Manufacturing Development Document (Sodium Silicate Manufacturing Category), it was determined that no further effort be given to developing BPT, BAT, NSPS, and Pretreatment regulations. The basis for this determination is that the small quantities of toxic pollutants found during screening are below accepted levels of treatability (See Appendix C).

Other sources of technology based limits:
LDEQ Light Commercial General Permit, LAG480000
Best Professional Judgement

C. FEE RATE
1. Fee Rating Facility Type: Minor
2. Complexity Type: II
3. Wastewater Type: II
4. SIC code: 2819

D. LOCATION - 4000 Pardue Road in Ball, Rapides Parish
Latitude 31°22'51", Longitude 92°24'92"

3. OUTFALL INFORMATION

Outfall 002

Discharge Type:	process wastewater including cooling water (chainwater), filter backwash, and miscellaneous de minimis process related wastewaters; railcar washout water; and low contamination potential stormwater runoff
Treatment:	sulfuric acid (to lower pH)
Location:	at the point of discharge prior to commingling with other waters and/or discharging into Flagon Bayou (Latitude 31°22'29", Longitude 92°24'50")
Flow:	0.0144 MGD

Discharge Route: Flagon Bayou via and unnamed ditch, thence to Catahoula Lake
Effluent Data: The effluent data are contained in Appendix B

4. RECEIVING WATERS

STREAM - Flagon Bayou via an unnamed ditch, thence to Catahoula Lake

BASIN AND SEGMENT - Ouachita River Basin, Segment 081603

1. TSS (15%), mg/L: 7.3
2. Average Hardness, mg/L $CaCO_3$: 19.5
3. Critical Flow, cfs: 0.1
4. Mixing Zone Fraction: 1
5. Harmonic Mean Flow, cfs:1
6. River Basin:Ouachita River, Segment No. 081603
7. Designated Uses:
   The designated uses are primary contact recreation, secondary contact recreation, and fish and wildlife propagation.

Information based on the following: Water Quality Management Plan, Volume 5A, 1994; LAC 33:IX Chapter 11;/Recommendation(s) from the Engineering Section. Hardness and 15% TSS data come from monitoring station # 2579 / in Flagon Bayou at the bridge on Louisiana Highway 623 at Paradise listed in Hardness and TSS Data for All LDEQ Ambient Stations for the Period of Record as of March 1998, LeBlanc and are included in a memo from Brian Baker to Jenniffer Sheppard dated November 7, 2005.

5. PROPOSED EFFLUENT LIMITS RATIONALE

The following section sets forth the principal facts and the significant factual, legal, methodological, and policy questions considered in preparing the draft permit. Also set forth are any calculations or other explanations of the derivation of specific effluent limitations and conditions, including a citation to the applicable effluent limitation guideline or performance standard provisions as required under LAC 33:IX.2707/40 CFR Part 122.44 and reasons why they are applicable or an explanation of how the alternate effluent limitations were developed.

A. TECHNOLOGY-BASED VERSUS WATER QUALITY STANDARDS-BASED EFFLUENT LIMITATIONS AND CONDITIONS

Following regulations promulgated at LAC 33:IX.2707.L.2.b/40 CFR Part 122.44(l)(2)(ii), the draft permit limits are based on either technology-based effluent limits pursuant to LAC 33:IX.2707.A/40 CFR Part 122.44(a) or on State water quality standards and requirements pursuant to LAC 33:IX.2707.D/40 CFR Part 122.44(d), whichever are more stringent.

B. TECHNOLOGY-BASED EFFLUENT LIMITATIONS AND CONDITIONS

Regulations promulgated at LAC 33:IX.2707.A/40 CFR Part 122.44(a) require technology-based effluent limitations to be placed in LPDES permits based on effluent limitations guidelines where applicable, on BPJ (best professional judgement) in the absence of guidelines, or on a combination

of the two. The following is a rationale for types of wastewaters. See outfall information descriptions for associated outfall(s) in Section 3.

Technology Basis - (40 CFR Chapter 1, Subchapter N/Parts 401-402, and 404-471 have been adopted by reference at LAC 33:IX.4903)

Guideline	Reference
Inorganic Chemicals	
Sodium Silicate	40 CFR 415 (Subpart S [Reserved])

According to the Inorganic Chemical Manufacturing Development Document (Sodium Silicate Manufacturing Category), it was determined that no further effort be given to developing BPT, BAT, NSPS, and Pretreatment regulations. The basis for this determination is that the small quantities of toxic pollutants found during screening are below accepted levels of treatability (See Appendix C).

Outfall 002 -the discharge of process wastewater including cooling water (chainwater), filter backwash, and miscellaneous de minimis process related wastewaters; railcar washout water; and low contamination potential stormwater runoff (estimated Outfall 002 flow is 0.0144 MGD).

PARAMETER	DISCHARGE LIMITATIONS		MEASUREMENT FREQUENCY	SAMPLE TYPE	REFERENCE
	MONTHLY AVERAGE	DAILY MAXIMUM			
Flow (MGD)	Report	Report	1/month	Estimate	LAC 33:IX.2707.I.1.b
TOC	---	50 mg/l	1/month	Grab	BPJ; *; LCGP
Oil & Grease	---	15 mg/l	1/month	Grab	BPJ; *; LCGP
Temperature	---	Report °F	1/month	Grab	BPJ;*; LCGP
Total Residual Chlorine	---	0.2 mg/L	1/month	Grab	BPJ:*; LCGP
pH Min/Max values (su)	6.0	9.0	Continuous	Recorder	LAC 33:IX.1113.C.1

*	Existing permits for similar outfalls
BPJ	Best Professional Judgement
su	Standard Units
LCGP	Light Commercial General Permit, LAG480000

Treatment: Addition of sulfuric acid for pH control.

Monitoring Frequency: Flow shall be monitored once per month by estimate. TOC, Oil and Grease, Temperature, and Total Residual Chlorine shall be monitored once per month by grab sample. Monitoring frequencies are established based on the Non-Contact Cooling Water Schedule General

Permit for Light Commercial Facilities, LAG480000. PQ Corporation is currently set up to continuously monitor pH, therefore, this has been incorporated into the permit as continuous monitoring with the pH range excursion provision.

Limits Justification: Flow reporting is consistent with LAC 33:IX.2707.I.1.b.
TOC, Oil and Grease, Temperature, Total Residual Chlorine, and pH limits are consistent with the limits established in Light Commercial General Permit under the Non-Contact Cooling Water and Utility Wash Water Schedules (Schedules C and E), similar discharges, and existing permits for similar outfalls.

The usage of concentration limits is based on BPJ for similar outfalls since the flow is variable and estimated.

6. WATER QUALITY-BASED EFFLUENT LIMITATIONS SCREEN

In accordance with LAC 33:IX.2707.D.1/40 CFR § 122.44(d)(1), the existing (or potential) discharge (s) was evaluated in accordance with the Permitting Guidance Document for Implementing Louisiana Surface Water Quality Standards, LDEQ, September 27, 2001, to determine whether pollutants would be discharged "at a level which will cause, have the reasonable potential to cause, or contribute to an excursion above any state water quality standard." Calculations, results, and documentation are given in Appendix A.

The following pollutants received water quality based effluent limits:

NONE

Minimum quantification levels (MQL's) for state water quality numerical standards-based effluent limitations are set at the values listed in the Permitting Guidance Document for Implementing Louisiana Surface Water Quality Standards, LDEQ, September 27, 2001.

7. COMPLIANCE HISTORY

This facility is currently covered under the City of Pineville's Municipal Sewage Treatment Plant, permit LA0033464.

A. Compliance History
1. WQMD - None
2. Other Divisions - None

B. DMR Review/Excursions

Date	Parameter	Outfall	Reported Value	Permit Limits

No DMRs on file since the discharges from this facility are covered under permit LA0033464.

C. Inspections

A facility inspection, conducted on August 28, 2002, found no areas of concern.

8. EXISTING EFFLUENT LIMITS

None. This facility is currently covered under the City of Pineville's Municipal Sewage Treatment Plant, permit LA0033464.

9. ENDANGERED SPECIES

The receiving waterbody, Subsegment 081603 of the Ouachita River Basin is not listed in Section II.2 of the Implementation Strategy as requiring consultation with the U.S. Fish and Wildlife Service (FWS). This strategy was submitted with a letter dated October 21, 2005 from Watson (FWS) to Gautreaux (LDEQ). Therefore, in accordance with the Memorandum of Understanding between the LDEQ and the FWS, no further informal (Section 7, Endangered Species Act) consultation is required. It was determined that the issuance of the LPDES permit is not likely to have an adverse effect on any endangered or candidate species or the critical habitat. The effluent limitations established in the permit ensure protection of aquatic life and maintenance of the receiving water as aquatic habitat.

10. HISTORIC SITES

The discharge is from an existing facility location, which does not include an expansion on undisturbed soils. Therefore, there should be no potential effect to sites or properties on or eligible for listing on the National Register of Historic Places, and in accordance with the "Memorandum of Understanding for the Protection of Historic Properties in Louisiana Regarding LPDES Permits" no consultation with the Louisiana State Historic Preservation Officer is required.

11. TENTATIVE DETERMINATION

On the basis of preliminary staff review, the Department of Environmental Quality has made a tentative determination to reissue a permit for the discharge described in the application.

12. PUBLIC NOTICES

Upon publication of the public notice, a public comment period shall begin on the date of publication and last for at least 30 days thereafter. During this period, any interested persons may submit written comments on the draft permit and may request a public hearing to clarify issues involved in the permit decision at this Office's address on the first page of the statement of basis. A request for a public hearing shall be in writing and shall state the nature of the issues proposed to be raised in the hearing.

Public notice published in:

Local newspaper of general circulation

Office of Environmental Services Public Notice Mailing List

13. STORM WATER REQUIREMENT

Stormwater discharges are covered under the Multi-Sector General Permit, LAR05M520, effective on June 19, 2001.

Should Multi-Sector General Permit coverage be canceled at any time, PQ Corporation must request a permit modification to include additional stormwater outfalls, a stormwater pollution prevention plan, and any additional stormwater requirements current at the time.

14. TMDL WATERBODY

The discharges include process wastewater including cooling water (chainwater), filter backwash, and miscellaneous de minimis process related wastewaters; railcar washout water; and low contamination potential stormwater runoff are to Flagon Bayou via an unnamed ditch, thence to Catahoula Lake, Segment No. 081603, of the Ouachita River Basin. The 2004 Integrated Report shows the following impairments oil & grease, organic enrichment/low DO, pathogen indicators and Mercury.

Oil & Grease
A limit of 15 mg/L (daily maximum) has been established in this permit to address the oil & grease impairment of this waterbody. This limit is consistent with the limits established in the Light Commercial General Permit for similar discharges and considered protective of waters of the state.

Organic Enrichment/low DO
A daily maximum limitation of 50 mg/L has been established for TOC to address the organic enrichment/low DO impairment. This limit is consistent with the limits established in the Light Commercial General Permit (Schedule C) for similar discharges and considered protective of waters of the state.

Pathogen Indicators
Pathogen Indicators is associated with fecal coliform in sanitary wastewater. PQ Corporation is not permitted to discharge sanitary wastewater. Therefore, no additional requirements were placed in this permit.

Mercury
The Mercury impairment was addressed in the Mercury TMDL for Little River and Catahoula Lake Watershed, issued in the Federal Register Notice: Volume 68, Number 48, page 11858 (3/12/2003). This facility was not considered in the TMDL since the discharges are covered under another permit. However, it has been determined that dischargers from PQ Corporation do not have reasonable potential to contain mercury. Therefore, no additional requirements were placed in this permit.

APPENDIX A

Developer: Bruce Fielding Time: 03:00 PM

Software: Lotus 4.0 LA0002780, AI32739

Revision date: 02/14/05

Water Quality Screen for PQ Corporation / Pineville Plant

Input variables:

Receiving Water Characteristics:

Receiving Water Name=	Unnamed ditch, thence to Flagon Bayou
Critical flow (Qr) cfs=	0.1
Harm. mean/avg tidal cfs=	1
Drinking Water=1 HHNPCR=2	
Marine, 1=y, 0=n	
Rec. Water Hardness=	19.5
Rec. Water TSS=	7.3
Fisch/Specific=1,Stream=0	
Diffuser Ratio=	

Effluent Characteristics:

Permittee=	PQ Corporation / Pineville Plant
Permit Number=	LA0002780, AI32739
Facility flow (Qef),MGD=	0.0144
Outfall Number =	2
Eff. data, 2=lbs/day	
MQL, 2=lbs/day	1
Effluent Hardness=	N/A
Effluent TSS=	N/A
WQBL ind. 0=y, 1=n	
Acute/Chr. ratio 0=n, 1=y	0
Aquatic,acute only1=y,0=n	

Page Numbering/Labeling

Appendix	Appendix A-1
Page Numbers 1=y, 0=n	1
Input Page # 1=y, 0=n	1

Fischer/Site Specific inputs:

Pipe=1,Canal=2,Specific=3	
Pipe width, feet	
ZID plume dist., feet	
MZ plume dist., feet	
HHnc plume dist., feet	
HHc plume dist., feet	

Fischer/site specific dilutions:

F/specific ZID Dilution =	---
F/specific MZ Dilution =	---
F/specific HHnc Dilution=	---
F/specific HHc Dilution=	---

Dilution:

ZID Fs =	0.1
MZ Fs =	1
Critical Qr (MGD)=	0.06463
Harm. Mean (MGD)=	0.6463
ZID Dilution =	0.690217
MZ Dilution =	0.182209
HHnc Dilution=	0.182209
HHc Dilution=	0.021795
ZID Upstream =	0.448819
MZ Upstream =	4.488194
MZhhnc Upstream=	4.488194
MZhhc Upstream=	44.88194
ZID Hardness=	---
MZ Hardness=	---
ZID TSS=	---
MZ TSS=	---

Multipliers:

WLAa --> LTAa	0.32
WLAc --> LTAc	0.53
LTA a,c-->WQBL avg	1.31
LTA a,c-->WQBL max	3.11
LTA h --> WQBL max	2.38
WQBL-limit/report	2.13
WLA Fraction	1
WQBL Fraction	1

Conversions:

ug/L-->lbs/day Qef	0.00012
ug/L-->lbs/day Qeo	0
ug/L-->lbs/day Qr	0.000834
lbs/day-->ug/L Qeo	8326.672
lbs/day-->ug/L Qef	8326.672
diss-->tot 1=y0=n	1
Cu diss->tot1=y0=n	1
cfs-->MGD	0.6463

Receiving Stream:

Default Hardness=	25
Default TSS=	10
99 Crit., 1=y, 0=n	1

Toxicity Dilution Series:

Biomonitoring dilution:	0.182209
Dilution Series Factor:	0.75

	Percent Effluent
Dilution No. 1	24.295%
Dilution No. 2	18.2209%
Dilution No. 3	13.6657%
Dilution No. 4	10.2493%
Dilution No. 5	7.6870%

Partition Coefficients; Dissolved-->Total

METALS	FW
Total Arsenic	1.820991
Total Cadmium	4.089072
Chromium III	4.861641
Chromium VI	1
Total Copper	2.743802
Total Lead	5.166991
Total Mercury	3.195497
Total Nickel	2.151927
Total Zinc	3.269378

Aquatic Life, Dissolved Metal Criteria, ug/L

METALS	ACUTE	CHRONIC
Arsenic	339.8	150
Cadmium	5.395402	0.307127
Chromium III	143.8479	46.66277
Chromium VI	15.712	10.582
Copper	3.949158	3.038601
Lead	10.48687	0.408658
Mercury	1.734	0.012
Nickel	355.0181	39.4276
Zinc	28.64522	26.15743

Site Specific Multiplier Values:

CV =	---
N =	---
WLAa --> LTAa	---
WLAc --> LTAc	---
LTA a,c-->WQBL avg	---
LTA a,c-->WQBL max	---
LTA h --> WQBL max	---

(*1)	(*2)	(*3)	(*4)	(*5)	(*6)	(*7)	(*8)	(*9)	(*10)	(*11)
Toxic Parameters	Instream Conc.	CuEffluent /Tech (Avg)	Effluent /Tech (Max)	MQL 1=No 0=95 %	95th % estimate Non-Tech		Numerical Criteria Acute FW	Chronic FW	HHNDW	HH Carcinogen Indicator
	ug/L	ug/L	ug/L	ug/L		ug/L	ug/L	ug/L	ug/L	"C"
NONCONVENTIONAL										
Total Phenols (4AAP)		14		5	0	29.82	700	350	50	
3-Chlorophenol				10						
4-Chlorophenol				10			383	192		
2,3-Dichlorophenol				10						
2,5-Dichlorophenol				10						
2,6-Dichlorophenol				10						
3,4-Dichlorophenol				10						
2,4-Dichlorophenocy-acetic acid (2,4-D)				---						
2-(2,4,5-Trichlorophen-oxy) propionic acid (2,4,5-TP, Silvex)				---						
METALS AND CYANIDE										
Total Arsenic				10			618.7728	273.1487		
Total Cadmium				1			22.06219	1.255864		
Chromium III		0.0075		10	0	0.015975	699.3367	226.8576		
Chromium VI				10			15.712	10.582		
Total Copper		0.005		10	0	0.01065	10.83571	8.33732		
Total Lead		0.006		5	0	0.01278	54.18558	2.111534		
Total Mercury		0.0006		0.2	0	0.001278	5.540991	0.038346		
Total Nickel				40			763.9729	84.84532		
Total Zinc		0.078		20	0	0.16614	93.65205	85.51853		
Total Cyanide				20			45.9	5.2	12844	
DIOXIN										
2,3,7,8 TCDD; dioxin			1.0E-005						7.2E-007	C
VOLATILE COMPOUNDS										
Benzene				10			2249	1125	12.5	C
Bromoform				10			2930	1465	34.7	C
Bromodichloromethane				10					3.3	C
Carbon Tetrachloride				10			2730	1365	1.2	C
Chloroform				10			2890	1445	70	C
Dibromochloromethane				10					5.08	C
1,2-Dichloroethane				10			11800	5900	6.8	C
1,1-Dichloroethylene				10			1160	580	0.58	C
1,3-Dichloropropylene				10			606	303	162.79	
Ethylbenzene				10			3200	1600	8100	
Methyl Chloride				50			55000	27500		
Methylene Chloride				20			19300	9650	87	C
1,1,2,2-Tetrachloro-ethane				10			932	466	1.8	C

(*1) Toxic Parameters	(*12) WLAa Acute	(*13) WLAc Chronic	(*14) WLAh HHNDW	(*15) LTAa Acute	(*16) LTAc Chronic	(*17) LTAh HHNDW	(*18) Limiting A,C,HH	(*19) WQBL Avg	(*20) WQBL Max	(*21) WQBL Avg	(*22) WQBL Max	(*23) Need WQBL?
	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	lbs/day	lbs/day	
NONCONVENTIONAL												
Total Phenols (4AAP)	1014.174	1920.868	274.4097	324.5356	1018.06	274.4097	274.4097	274.4097	653.0951	0.032956	0.078434	no
3-Chlorophenol	---	---	---	---	---	---	---	---	---	---	---	no
4-Chlorophenol	554.8978	1053.733	---	177.5673	558.4787	---	177.5673	232.6132	552.2343	0.027936	0.066321	no
2,3-Dichlorophenol	---	---	---	---	---	---	---	---	---	---	---	no
2,5-Dichlorophenol	---	---	---	---	---	---	---	---	---	---	---	no
2,6-Dichlorophenol	---	---	---	---	---	---	---	---	---	---	---	no
3,4-Dichlorophenol	---	---	---	---	---	---	---	---	---	---	---	no
2,4-Dichlorophenocy-acetic acid (2,4-D)	---	---	---	---	---	---	---	---	---	---	---	no
2-(2,4,5-Trichlorophen-oxy) propionic acid (2,4,5-TP, Silvex)	---	---	---	---	---	---	---	---	---	---	---	no
METALS AND CYANIDE												
Total Arsenic	896.49	1499.093	---	286.8768	794.5192	---	286.8768	375.8086	892.1868	0.045133	0.107148	no
Total Cadmium	31.96413	6.892426	---	10.22852	3.652986	---	3.652986	4.785412	11.36079	0.000575	0.001364	no
Chromium III	1013.213	1245.039	---	324.2281	659.8705	---	324.2281	424.7388	1008.349	0.051009	0.121099	no
Chromium VI	22.76385	58.07607	---	7.284432	30.78032	---	7.284432	9.542606	22.65458	0.001146	0.002721	no
Total Copper	15.69899	45.75684	---	5.023676	24.25112	---	5.023676	6.581016	15.62363	0.00079	0.001876	no
Total Lead	78.50512	11.58851	---	25.12164	6.141911	---	6.141911	8.045903	19.10134	0.000966	0.002294	no
Total Mercury	8.027896	0.21045	---	2.568927	0.111539	---	0.111539	0.146115	0.346885	0.000018	0.000042	no
Total Nickel	1106.859	465.6476	---	354.1948	246.7932	---	246.7932	323.2991	767.5269	0.038827	0.092177	no
Total Zinc	135.6849	469.3423	---	43.41917	248.7514	---	43.41917	56.87912	135.0336	0.006831	0.016217	no
Total Cyanide	66.50081	28.53861	70490.37	21.28026	15.12546	70490.37	15.12546	19.81436	47.04019	0.00238	0.005649	no
DIOXIN												
2,3,7,8 TCDD; dioxin	---	---	0.000033	---	---	0.000033	0.000033	0.000033	0.000079	4E-009	9.4E-009	no
VOLATILE COMPOUNDS												
Benzene	3258.395	6174.219	573.5243	1042.686	3272.336	573.5243	573.5243	573.5243	1364.988	0.068878	0.16393	no
Bromoform	4245.041	8040.205	1592.103	1358.413	4261.309	1592.103	1358.413	1779.521	4224.665	0.213713	0.507365	no
Bromodichloromethane	---	---	151.4104	---	---	151.4104	151.4104	151.4104	360.3568	0.018184	0.043277	no
Carbon Tetrachloride	3955.277	7491.385	55.05833	1265.689	3970.434	55.05833	55.05833	55.05833	131.0388	0.006612	0.015737	no
Chloroform	4187.088	7930.441	3211.736	1339.868	4203.134	3211.736	1339.868	1755.227	4166.99	0.210796	0.500439	no
Dibromochloromethane	---	---	233.0803	---	---	233.0803	233.0803	233.0803	554.7311	0.027992	0.066621	no
1,2-Dichloroethane	17096.07	32380.35	311.9972	5470.742	17161.58	311.9972	311.9972	311.9972	742.5534	0.03747	0.089178	no
1,1-Dichloroethylene	1680.631	3183.153	26.61153	537.8018	1687.071	26.61153	26.61153	26.61153	63.33544	0.003196	0.007606	no
1,3-Dichloropropylene	877.9846	1662.923	893.4232	280.9551	881.3491	893.4232	280.9551	368.0511	873.7703	0.044201	0.104936	no
Ethylbenzene	4636.222	8781.111	44454.38	1483.591	4653.989	44454.38	1483.591	1943.504	4613.968	0.233407	0.554119	no
Methyl Chloride	79685.07	150925.3	---	25499.22	79990.43	---	25499.22	33403.98	79302.58	4.011685	9.523923	no
Methylene Chloride	27962.22	52961.08	3991.729	8947.909	28069.37	3991.729	3991.729	3991.729	9500.315	0.479391	1.14095	no
1,1,2,2-Tetrachloro-ethane	1350.3	2557.499	82.5875	432.0959	1355.474	82.5875	82.5875	82.5875	196.5583	0.009918	0.023606	no

(*1) Toxic Parameters	(*2) Instream Conc. ug/L	(*3) CuEffluent /Tech (Avg) ug/L	(*4) Effluent /Tech (Max) ug/L	(*5) MQL ug/L	(*6) Effluent 1=No 0=95 %	(*7) 95th % estimate Non-Tech ug/L	(*8) Numerical Criteria Acute FW ug/L	(*9) Chronic FW ug/L	(*10) HHNDW ug/L	(*11) HH Carcinogen Indicator "C"
VOLATILE COMPOUNDS (cont'd)										
Tetrachloroethylene				10			1290	645	2.5	C
Toluene		13.4		10	0	28.542	1270	635	46200	
1,1,1-Trichloroethane				10			5280	2640		
1,1,2-Trichloroethane				10			1800	900	6.9	C
Trichloroethylene				10			3900	1950	21	C
Vinyl Chloride				10					35.8	C
ACID COMPOUNDS										
2-Chlorophenol				10			258	129	126.4	
2,4-Dichlorophenol				10			202	101	232.6	
BASE NEUTRAL COMPOUNDS										
Benzidine				50			250	125	0.00017	C
Hexachlorobenzene				10					0.00025	C
Hexachlorabutadiene				10			5.1	1.02	0.11	C
PESTICIDES										
Aldrin				0.05			3		0.0004	C
Hexachlorocyclohexane (gamma BHC, Lindane)				0.05			5.3	0.21	0.2	C
Chlordane				0.2			2.4	0.0043	0.00019	C
4,4'-DDT				0.1			1.1	0.001	0.00019	C
4,4'-DDE				0.1			52.5	10.5	0.00019	C
4,4'-DDD				0.1			0.03	0.006	0.00027	C
Dieldrin				0.1			0.2374	0.0557	0.00005	C
Endosulfan				0.1			0.22	0.056	0.64	
Endrin				0.1			0.0864	0.0375	0.26	
Heptachlor				0.05			0.52	0.0038	0.00007	C
Toxaphene				5			0.73	0.0002	0.00024	C
Other Parameters:										
Fecal Col.(col/100ml)										
Chlorine							19	11		
Ammonia								4000		
Chlorides										
Sulfates										
TDS										

(*1) Toxic Parameters	(*12) WLAa Acute	(*13) WLAc Chronic	(*14) WLAh HHNDW	(*15) LTAa Acute	(*16) LTAc Chronic	(*17) LTAh HHNDW	(*18) Limiting A,C,HH	(*19) WQBL Avg	(*20) WQBL Max	(*21) WQBL Avg	(*22) WQBL MaxWQBL?	(*23) Need
	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	lbs/day	lbs/day	
Tetrachloroethylene	1868.977	3539.885	114.7049	598.0727	1876.139	114.7049	114.7049	114.7049	272.9976	0.013776	0.032786	no
Toluene	1840.001	3485.003	253554.6	588.8002	1847.052	253554.6	588.8002	771.3283	1831.169	0.092633	0.219916	no
1,1,1-Trichloroethane	7649.767	14488.83	---	2447.925	7679.082	---	2447.925	3206.782	7613.048	0.385122	0.914297	no
1,1,2-Trichloroethane	2607.875	4939.375	316.5854	834.52	2617.869	316.5854	316.5854	316.5854	753.4733	0.038021	0.090489	no
Trichloroethylene	5650.396	10701.98	963.5208	1808.127	5672.049	963.5208	963.5208	963.5208	2293.18	0.115715	0.275402	no
Vinyl Chloride	---	---	1642.574	---	---	1642.574	1642.574	1642.574	3909.325	0.197267	0.469494	no
ACID COMPOUNDS												
2-Chlorophenol	373.7954	707.9771	693.7078	119.6145	375.2279	693.7078	119.6145	156.695	372.0012	0.018818	0.044676	no
2,4-Dichlorophenol	292.6615	554.3076	1276.554	93.65169	293.783	1276.554	93.65169	122.6837	291.2568	0.014734	0.034979	no
BASE NEUTRAL COMPOUNDS												
Benzidine	362.2049	686.0243	0.0078	115.9056	363.5929	0.0078	0.0078	0.0078	0.018564	9.4E-007	0.000002	no
Hexachlorobenzene	---	---	0.01147	---	---	0.01147	0.01147	0.01147	0.0273	0.000001	0.000003	no
Hexachlorabutadiene	7.388979	5.597958	5.047014	2.364473	2.966918	5.047014	2.364473	3.09746	7.353512	0.000372	0.000883	no
PESTICIDES												
Aldrin	4.346458	---	0.018353	1.390867	---	0.018353	0.018353	0.018353	0.04368	0.000002	0.000005	no
Hexachlorocyclohexane (gamma BHC, Lindane)	7.678743	1.152521	9.176389	2.457198	0.610836	9.176389	0.610836	0.800195	1.8997	0.000096	0.000228	no
Chlordane	3.477167	0.023599	0.008718	1.112693	0.012508	0.008718	0.008718	0.008718	0.020748	0.000001	0.000002	no
4,4'-DDT	1.593701	0.005488	0.008718	0.509984	0.002909	0.008718	0.002909	0.00381	0.009046	4.6E-007	0.000001	no
4,4'-DDE	76.06302	57.62604	0.008718	24.34017	30.5418	0.008718	0.008718	0.008718	0.020748	0.000001	0.000002	no
4,4'-DDD	0.043465	0.032929	0.012388	0.013909	0.017452	0.012388	0.012388	0.012388	0.029484	0.000001	0.000004	no
Dieldrin	0.34395	0.305692	0.002294	0.110064	0.162017	0.002294	0.002294	0.002294	0.00546	2.8E-007	6.6E-007	no
Endosulfan	0.31874	0.307339	3.512444	0.101997	0.16289	3.512444	0.101997	0.133616	0.31721	0.000016	0.000038	no
Endrin	0.125178	0.205807	1.426931	0.040057	0.109078	1.426931	0.040057	0.052475	0.124577	0.000006	0.000015	no
Heptachlor	0.753386	0.020855	0.003212	0.241084	0.011053	0.003212	0.003212	0.003212	0.007644	3.9E-007	9.2E-007	no
Toxaphene	1.057638	0.001098	0.011012	0.338444	0.000582	0.011012	0.000582	0.000762	0.001809	9.2E-008	2.2E-007	no
Other Parameters:												
Fecal Col.(col/100ml)	---	---	---	---	---	---	---	---	---	---	---	no
Chlorine	27.52757	60.37014	---	8.808822	31.99617	---	8.808822	11.53956	27.39544	0.001386	0.00329	no
Ammonia	---	21952.78	---	---	11634.97	---	11634.97	15241.81	36184.76	1.830481	4.345645	no
Chlorides	---	---	---	---	---	---	---	---	---	---	---	no
Sulfates	---	---	---	---	---	---	---	---	---	---	---	no
TDS	---	---	---	---	---	---	---	---	---	---	---	no
	---	---	---	---	---	---	---	---	---	---	---	no
	---	---	---	---	---	---	---	---	---	---	---	no

APPENDIX A-2 LA0002780, AI No. 32739

Documentation and Explanation of Water Quality Screen
and Associated Lotus Spreadsheet

Each reference column is marked by a set of parentheses enclosing a number and asterisk, for example (*1) or (*19). These columns represent inputs, existing data sets, calculation points, and results for determining Water Quality Based Limits for an effluent of concern. The following represents a summary of information used in calculating the water quality screen:

Receiving Water Characteristics:

Receiving Water: Flagon Bayou, thence to Cathoula Lake
Critical Flow, Qrc (cfs): 0.1
Harmonic Mean Flow, Qrh (cfs): 1
Segment No.: 081603
Receiving Stream Hardness (mg/L): 19.5
Receiving Stream TSS (mg/L): 7.3
MZ Stream Factor, Fs: 1
Plume distance, Pf: N/A

Effluent Characteristics:

Company: PQ Corporation
Facility flow, Qe (MGD): 0.0144
Effluent Hardness: N/A
Effluent TSS: N/A
Pipe/canal width, Pw: N/A
Permit Number: LA0002780

Variable Definition:
Qrc, critical flow of receiving stream, cfs
Qrh, harmonic mean flow of the receiving stream, cfs
Pf = Allowable plume distance in feet, specified in LAC 33.IX.1115.D
Pw = Pipe width or canal width in feet
Qe, total facility flow , MGD
Fs, stream factor from LAC.IX.33.11 (1 for harmonic mean flow)
Cu, ambient concentration, ug/L
Cr, numerical criteria from LAC.IX.1113, Table 1
WLA, wasteload allocation
LTA, long term average calculations
WQBL, effluent water quality based limit
ZID, Zone of Initial Dilution in % effluent
MZ, Mixing Zone in % effluent

Formulas used in aquatic life water quality screen (dilution type WLA):

Streams:

$$\text{Dilution Factor} = \frac{Qe}{(Qrc \times 0.6463 \times Fs + Qe)}$$

$$WLA\ a,c,h = \frac{Cr}{\text{Dilution Factor}} - \frac{(Fs \times Qrc \times 0.6463 \times Cu)}{Qe}$$

Static water bodies (in the absence of a site specific dilution):

Discharge from a pipe:

$$\text{Critical Dilution} = \frac{(2.8)\ Pw\ \pi^{1/2}}{Pf}$$

$$WLA = \frac{(Cr-Cu)\ Pf}{(2.8)\ Pw\ \pi^{1/2}}$$

Discharge from a canal:

$$\text{Critical Dilution} = \frac{(2.38)(Pw^{1/2})}{(Pf)^{1/2}}$$

$$WLA = \frac{(Cr-Cu)\ Pf^{1/2}}{2.38\ Pw^{1/2}}$$

Formulas used in human health water quality screen, human health non-carcinogens (dilution type WLA):

Streams:

$$\text{Dilution Factor} = \frac{Qe}{(Qrc \times 0.6463 + Qe)}$$

$$WLA\ a,c,h = \frac{Cr}{\text{Dilution Factor}} - \frac{(Qrc \times 0.6463 \times Cu)}{Qe}$$

Formulas used in human health water quality screen, human health carcinogens (dilution type WLA):

$$\text{Dilution Factor} = \frac{Qe}{(Qrh \times 0.6463 + Qe)}$$

$$WLA\ a,c,h = \frac{Cr}{\text{Dilution Factor}} - \frac{(Qrh \times 0.6463 \times Cu)}{Qe}$$

Static water bodies in the absence of a site specific dilution (human health carcinogens and human health non-carcinogens):

Discharge from a pipe:

$$\text{Critical Dilution} = \frac{(2.8)\ Pw\ \pi^{1/2}}{Pf}$$

$$WLA = \frac{(Cr-Cu)\ Pf^{*}}{(2.8)\ Pw\ \pi^{1/2}}$$

Discharge from a canal:

$$\text{Critical Dilution} = \frac{(2.38)(Pw^{1/2})}{(Pf)^{1/2}}$$

$$WLA = \frac{(Cr-Cu)\ Pf^{1/2*}}{2.38\ Pw^{1/2}}$$

* Pf is set equal to the mixing zone distance specified in LAC 33:IX.1115 for the static water body type, i.e., lake, estuary, Gulf of Mexico, etc.

If a site specific dilution is used, WLA are calculated by subtracting Cu from Cr and dividing by the site specific dilution for human health and aquatic life criteria.

$$WLA = \frac{(Cr-Cu)}{\text{site specific dilution}}$$

Longterm Average Calculations:
LTAa = WLAa X 0.32
LTAc = WLAc X 0.53
LTAh = WLAh

WQBL Calculations:
Select most limiting LTA to calculate daily max and monthly avg WQBL

If aquatic life LTA is more limiting:
Daily Maximum = Min(LTAa, LTAc) X 3.11
Monthly Average = Min(LTAc, LTAc) X 1.31

If human health LTA is more limiting:
Daily Maximum = LTAh X 2.38
Monthly Average = LTAh

Mass Balance Formulas:

mass (lbs/day): (ug/L) X 1/1000 X (flow, MGD) X 8.34 = lbs/day

$$\text{concentration(ug/L)}: \frac{\text{lbs/day}}{\text{(flow, MGD) X 8.34 X 1/1000}} = \text{ug/L}$$

The following is an explanation of the references in the spreadsheet.

(*1) Parameter being screened.
(*2) Instream concentration for the parameter being screened in ug/L. In the absence of accurate supporting data, the instream concentration is assumed to be zero (0).
(*3) Monthly average effluent or technolgy value in concentration units of ug/L or mass units of lbs/day. Units determined on a case-by-case basis as appropriate to the particular situation.
(*4) Daily maximum technology value in concentration units of ug/L or mass units of lbs/day. Units determined on a case-by-case basis as appropriate to the particular situation.
(*5) Minimum analytical Quantification Levels (MQL's). Established in a letter dated January 27, 1994 from Wren Stenger of EPA Region 6 to Kilren Vidrine of LDEQ and from the "Permitting Guidance Document for Implementing Louisiana Surface Water Quality Standards". The applicant must test for the parameter at a level at least as sensitive as the specified MQL. If this is not done, the MQL becomes the application value for screening purposes if the pollutant is suspected to be present

on-site and/or in the waste stream. Units are in ug/l or lbs/day depending on the units of the effluent data.

(*6) States whether effluent data is based on 95th percentile estimation. A "1" indicates that a 95th percentile approximation is being used, a "0" indicates that no 95th percentile approximation is being used.

(*7) 95th percentile approximation multiplier (2.13). The constant, 2.13, was established in memorandum of understanding dated October 8, 1991 from Jack Ferguson of Region 6 to Jesse Chang of LDEQ and included in the "Permitting Guidance Document for Implementing Louisiana Surface Water Quality Standards". This value is screened against effluent Water Quality Based Limits established in columns (*18) - (*21). Units are in ug/l or lbs/day depending on the units of the measured effluent data.

(*8) LAC 33.IX.1113.C.6, Table 1, Numerical Criteria for Specific Toxic Substances, freshwater (FW) or marine water (MW) (whichever is applicable) aquatic life protection, acute criteria. Units are specified. Some metals are hardness dependent. The hardness of the receiving stream shall generally be used, however a flow weighted hardness may be determined in site-specific situations. Dissolved metals are converted to Total metals using partition coefficients in accordance with the "Permitting Guidance Document for Implementing Louisiana Surface Water Quality Standards". Similar to hardness, the TSS of the receiving stream shall generally be used, however, a flow weighted TSS may be determined in site-specific situations.

Hardness Dependent Criteria:

Metal	Formula
Cadmium	$e^{(1.1280[\ln(\text{hardness})] - 1.6774)}$
Chromium III	$e^{(0.8190[\ln(\text{hardness})] + 3.6880)}$
Copper	$e^{(0.9422[\ln(\text{hardness})] - 1.3884)}$
Lead	$e^{(1.2730[\ln(\text{hardness})] - 1.4600)}$
Nickel	$e^{(0.8460[\ln(\text{hardness})] + 3.3612)}$
Zinc	$e^{(0.8473[\ln(\text{hardness})] + 0.8604)}$

Dissolved to Total Metal Multipliers for Freshwater Streams (TSS dependent):

Metal	Multiplier
Arsenic	$1 + 0.48 \times TSS^{-0.73} \times TSS$
Cadmium	$1 + 4.00 \times TSS^{-1.13} \times TSS$
Chromium III	$1 + 3.36 \times TSS^{-0.93} \times TSS$
Copper	$1 + 1.04 \times TSS^{-0.74} \times TSS$
Lead	$1 + 2.80 \times TSS^{-0.80} \times TSS$
Mercury	$1 + 2.90 \times TSS^{-1.14} \times TSS$
Nickel	$1 + 0.49 \times TSS^{-0.57} \times TSS$
Zinc	$1 + 1.25 \times TSS^{-0.70} \times TSS$

Dissolved to Total Metal Multipliers for Marine Environments (TSS dependent):

Metal	Multiplier

Copper	$1 + (10^{4.86} \times TSS^{-0.72} \times TSS) \times 10^{-6}$
Lead	$1 + (10^{6.06} \times TSS^{-0.85} \times TSS) \times 10^{-6}$
Zinc	$1 + (10^{5.36} \times TSS^{-0.52} \times TSS) \times 10^{-6}$

If a metal does not have multiplier listed above, then the dissolved to total metal multiplier shall be 1.

(*9) LAC 33.IX.1113.C.6, Table 1, Numerical Criteria for Specific Toxic Substances, freshwater (FW) or marine water (MW) (whichever is applicable) aquatic life protection, chronic criteria. Units are specified. Some metals are hardness dependent. The hardness of the receiving stream shall generally be used, however a flow weighted hardness may be determined in site-specific situations. Dissolved metals are converted to Total metals using partition coefficients in accordance with the "Permitting Guidance Document for Implementing Louisiana Surface Water Quality Standards". Similar to hardness, the TSS of the receiving stream shall generally be used, however, a flow weighted TSS may be determined in site-specific situations.
Hardness dependent criteria:

Metal	Formula
Cadmium	$e^{(0.7852[\ln(\text{hardness})] - 3.4900)}$
Chromium III	$e^{(0.8473[\ln(\text{hardness})] + 0.7614)}$
Copper	$e^{(0.8545[\ln(\text{hardness})] - 1.3860)}$
Lead	$e^{(1.2730[\ln(\text{hardness})] - 4.7050)}$
Nickel	$e^{(0.8460[\ln(\text{hardness})] + 1.1645)}$
Zinc	$e^{(0.8473[\ln(\text{hardness})] + 0.7614)}$

Dissolved to total metal multiplier formulas are the same as (*8), acute numerical criteria for aquatic life protection.

(*10) LAC 33.IX.1113.C.6, Table 1, Numerical Criteria for Specific Toxic Substances, human health protection, drinking water supply (HHDW), non-drinking water supply criteria (HHNDW), or human health non-primarry contact recreation (HHNPCR) (whichever is applicable). A DEQ and EPA approved Use Attainability Analysis is required before HHNPCR is used, e.g., Monte Sano Bayou. Units are specified.

(*11) C if screened and carcinogenic. If a parameter is being screened and is carcinogenic a "C" will appear in this column.

(*12) Wasteload Allocation for acute aquatic criteria (WLAa). Dilution type WLAa is calculated in accordance with the "Permitting Guidance Document for Implementing Louisiana Surface Water Quality Standards". Negative values indicate that the receiving water is not meeting the acute aquatic numerical criteria for that parameter. Units are in ug/L.
Dilution WLAa formulas for streams:

$$WLAa = (Cr/\text{Dilution Factor}) - \frac{(Fs \times Qrc \times 0.6463 \times Cu)}{Qe}$$

Dilution WLAa formulas for static water bodies:
WLAa = (Cr-Cu)/Dilution Factor)
Cr represents aquatic acute numerical criteria from column (*8).
If Cu data is unavailable or inadequate, assume Cu=0.

If water quality standards are being applied at end-of-pipe, such as in the case of certain TMDL's, then a blank shall appear in this column.

(*13) Wasteload Allocation for chronic aquatic criteria (WLAc). Dilution type WLAc is calculated in accordance with the "Permitting Guidance Document for Implementing Louisiana Surface Water Quality Standards". Negative values indicate that the receiving water is not meeting the chronic aquatic numerical criteria for that parameter. Units are in ug/L.
Dilution WLAc formula:

$$WLAc = (Cr/\text{Dilution Factor}) - \frac{(Fs \times Qrc \times 0.6463 \times Cu)}{Qe}$$

Dilution WLAc formulas for static water bodies:
WLAc = (Cr-Cu)/Dilution Factor)
Cr represents aquatic chronic numerical criteria from column (*9).
If Cu data is unavailable or inadequate, assume Cu=0.
If water quality standards are being applied at end-of-pipe, such as in the case of certain TMDL's, then a blank shall appear in this column.

(*14) Wasteload Allocation for human health criteria (WLAh). Dilution type WLAh is calculated in accordance with the "Permitting Guidance Document for Implementing Louisiana Surface Water Quality Standards". Negative values indicate that the receiving water is not meeting the human health numerical criteria for that parameter. Units are in ug/L. Dilution WLAh formula:

$$WLAh = (Cr/\text{Dilution Factor}) - \frac{(Fs \times Qrc,Qrh \times 0.6463 \times Cu)}{Qe}$$

Dilution WLAh formulas for static water bodies:
WLAh = (Cr-Cu)/Dilution Factor)
Cr represents human health numerical criteria from column (*10).
If Cu data is unavailable or inadequate, assume Cu=0.
If water quality standards are being applied at end-of-pipe, such as in the case of certain TMDL's, then a blank shall appear in this column.

(*15) Long Term Average for aquatic numerical criteria (LTAa). WLAa numbers are multiplied by a multiplier specified in the "Permitting Guidance Document for Implementing Louisiana Surface Water Quality Standards" which is 0.32. WLAa X 0.32 = LTAa.
If water quality standards are being applied at end-of-pipe, such as in the case of certain TMDL's, then a blank shall appear in this column.

(*16) Long Term Average for chronic numerical criteria (LTAc). WLAc numbers are multiplied by a multiplier specified in the "Permitting Guidance Document for Implementing Louisiana Surface Water Quality Standards" which is 0.53. WLAc X 0.53 = LTAc.
If water quality standards are being applied at end-of-pipe, such as in the case of certain TMDL's, then a blank shall appear in this column.

(*17) Long Term Average for human health numerical criteria (LTAh). WLAh numbers are multiplied by a multiplier specified in the "Permitting Guidance Document for Implementing Louisiana Surface Water Quality Standards" which is 1. WLAc X 1 = LTAh.
If water quality standards are being applied at end-of-pipe, such as in the case of certain TMDL's, then a blank shall appear in this column.

(*18) Limiting Acute, Chronic or Human Health LTA's. The most limiting LTA is placed in this column. Units are consistent with the WLA calculation. If standards are being applied at end-of-pipe, such as in the case of certain TMDL's, then the type of limit, Aquatic or Human Health (HH), is indicated.

(*19) End of pipe Water Quality Based Limit (WQBL) monthly average in terms of concentration, ug/L. If aquatic life criteria was the most limiting LTA then the limiting LTA is multiplied by 1.31 to determine the average WQBL ($LTA_{limiting\ aquatic}$ X 1.31 = $WQBL_{monthly\ average}$). If human health criteria was the most limiting criteria then LTAh = $WQBL_{monthly\ average}$. If water quality standards are being applied at end-of-pipe, such as in the case of certain TMDL's, then either the human health criteria or the chronic aquatic life criteria shall appear in this column depending on which is more limiting.

(*20) End of pipe Water Quality Based Limit (WQBL) daily maxium in terms of concentration, ug/L. If aquatic life criteria was the most limiting LTA then the limiting LTA is multiplied by 3.11 to determine the daily maximum WQBL ($LTA_{limiting\ aquatic}$ X 3.11 = $WQBL_{daily\ max}$). If human health criteria was the most limiting criteria then LTAh is multiplied by 2.38 to determine the daily maximum WQBL ($LTA_{limiting\ aquatic}$ X 2.38 = $WQBL_{daily\ max}$). If water quality standards are being applied at end-of-pipe, such as in the case of certain TMDL's, then either the human health criteria or the acute aquatic life criteria shall appear in this column depending on which is more limiting.

(*21) End of pipe Water Quality Based Limit (WQBL) monthly average in terms of mass, lbs/day. The mass limit is determined by using the mass balance equations above. Monthly average WQBL, ug/l/1000 X facility flow, MGD X 8.34 = monthly average WQBL, lbs/day.

(*22) End of pipe Water Quality Based Limit (WQBL) monthly average in terms of mass, lbs/day. Mass limit is determined by using the mass balance equations above. Daily maximum WQBL, ug/l/1000 X facility flow, MGD X 8.34 = daily maximum WQBL, lbs/day.

(*23) Indicates whether the screened effluent value(s) need water quality based limits for the parameter of concern. A "yes" indicates that a water quality based limit is needed in the permit; a "no" indicates the reverse.

APPENDIX B

OUTFALL NO.: 002		EFFLUENT			
		CONCENTRATION (ppm)		MASS (lbs/day)	
POLLUTANT	MQL* (ug/l)	Monthly Average	~~Daily~~ Maximum (ug/L)	Monthly ~~Average~~ (ug/L)	Daily Maximum
METALS, CYANIDE, AND TOTAL PHENOLS - use EPA Approved Method					
Antimony, Total	60	< .004	< .010	< .010	
Arsenic, Total	10	0.01	< .010	< .010	
Beryllium, Total	5	< 0.01	< .001	< .001	
Cadmium, Total	1	0.002	< .002	< .002	
Chromium, Total	10	0.027	0.0075	< .005	
Chromium, Hexavalent	10	0.07			
Copper, Total	10	0.008	< .005	.069	
Lead, Total	5	< 0.01	0.006	< .006	
Mercury, Total	0.2	0.0007	.0006	.0006	
Nickel, Total [Marine]	5	N/A			
Nickel, Total [Freshwater]	40	0.04	< .005	< .005	
Selenium, Total	5	< 0.01	< .010	< .010	
Silver, Total	2	0.055	< .005	< .005	
Thallium, Total	10	< 0.01	< .020	< .020	
Zinc, Total	20	0.052	.078	.107	
Cyanide, Total	20	< 0.001	< .010	< .010	
Cyanide, Free	--	< 0.001			
Phenols, Total	5	0.014	< .005	< .006	

@ OUTFALL # 002 — Supply WATER

Martin Grant

1-5-2006

OUTFALL NO.: 002		EFFLUENT			
		CONCENTRATION (ppm)		MASS (lbs/day)	
POLLUTANT	MQL* (ug/l)	Monthly Average	Daily Maximum	Monthly Average	Daily Maximum
VOLATILE ORGANIC CHEMICALS - EPA Method 624 suggested					
acrolein	50	<50			
acrylonitrile	50	<50			
benzene	10	<10			
bromoform	10	<10			
carbon tetrachloride	10	<10			
chlorobenzene	50	<50			
chlorodibromomethane	10	<50			
chloroethane	10	<10			
2-chloroethylvinyl ether	50	<10			
chloroform	10	<10			
dichlorobromomethane	10	<10			
1,1-dichloroethane	10	<10			
1,2-dichloroethane	10	<10			
1,1-dichloroethylene	10	<10			
1,2-dichloropropane	10	<10			
1,3-Dichloropropylene	10	<10			
ethylbenzene	10	<10			
methyl bromide	50	<10			
methyl chloride	50	<10			
methylene chloride	20	<10			
1,1,2,2-tetrachloroethane	10	<10			
tetrachloroethylene	10	<10			
toluene	10	13.4			
1,2-trans-dichloroethylene	10	<10			
1,1,1-trichloroethane	10	<10			

OUTFALL NO.: 002		EFFLUENT			
		CONCENTRATION *(ppm)*		MASS *(lbs/day)*	
POLLUTANT	MQL* *(ug/l)*	Monthly Average	Daily Maximum	Monthly Average	Daily Maximum
1,1,2-trichloroethane	10	<30			
trichloroethene (trichloroethylene)	10	<10			
vinyl chloride (chloroethylene)	10	<10			
ACID EXTRACTABLE ORGANIC CHEMICALS - EPA Method 625 suggested					
2-chlorophenol	10	<10			
3-chlorophenol	10				
4-chlorophenol	10				
2,3-dichlorophenol	10				
2,4-dichlorophenol	10	<10			
2,5-dichlorophenol	10				
2,6-dichlorophenol	10				
3,4-dichlorophenol	10				
2,4-dimethylphenol	10	<10			
2,4-dinitrophenol	50	<50			
2-methyl 4,6-dinitrophenol (4,6-dinitro-o-cresol)	50	<50			
2-nitrophenol	20	<10			
4-nitrophenol	50	<50			
4-chloro-3-methylphenol (p-chloro-m-cresol)	10	<20			
pentachlorophenol	50	<50			
phenol	10	<10			
2,4,6-trichlorophenol	10	<10			

OUTFALL NO.: 002		EFFLUENT			
		CONCENTRATION *(ppm)*		MASS *(lbs/day)*	
POLLUTANT	MQL* *(ug/l)*	Monthly Average	Daily Maximum	Monthly Average	Daily Maximum
BASE/NEUTRAL EXTRACTABLE ORGANIC CHEMICALS - EPA Method 625 suggested					
acenaphthene	10	<10			
acenaphthylene	10	<10			
anthracene	10	<10			
benzidine	50	<10			
benzo(a)anthracene	10	<10			
benzo(a)pyrene	10	<10			
3,4-benzo fluoranthene	10	<10			
benzo(ghi)perylene	20	<10			
benzo(k)fluoranthene	10	<10			
bis(2-chloroethoxy)methane	10	<10			
bis(2-chloroethyl)ether	10	<10			
bis(2-chloroisopropyl)ether	10	<10			
bis(2-ethylhexyl)phthalate	10	<10			
4-bromophenyl phenyl ether	10	<10			
butylbenzyl phthalate	10	<10			
2-chloronaphthalene	10	<10			
4-chlorophenyl phenyl ether	10	<10			
chrysene	10	<10			
dibenzo(a,h)anthracene	20	<10			
1,2-dichlorobenzene	10	<10			
1,3-dichlorobenzene	10	<10			
1,4-dichlorobenzene	10	<10			
3,3'-dichlorobenzidine	50	<20			
diethyl phthalate	10	<10			

OUTFALL NO.: 002		EFFLUENT			
		CONCENTRATION (ppm)		MASS (lbs/day)	
POLLUTANT	MQL* (ug/l)	Monthly Average	Daily Maximum	Monthly Average	Daily Maximum
dimethyl phthalate 10		<10			
di-n-butyl phthalate	10	<10			
2,4-dinitrotoluene	10	<10			
2,6-dinitrotoluene	10	<10			
di-n-octyl phthalate	10	<10			
1,2-diphenylhydrazine (as azobenzene)	20	<20			
fluoranthene	10	<10			
fluorene	10	<10			
hexachlorobenzene	10	<10			
hexachlorobutadiene	10	<10			
hexachlorocyclopentadiene	10	<10			
hexachloroethane	20	<10			
indeno(1,2,3-cd)pyrene	20	<10			
isophorone	10	<10			
naphthalene	10	<10			
nitrobenzene	10	<10			
N-nitrosodimethylamine	50	<10			
N-nitrosodi-n-propylamine	20	<10			
N-nitrosodiphenylamine	20	<20			
phenanthrene	10	<10			
pyrene	10	<10			
1,2,4-trichlorobenzene	10	<10			

OUTFALL NO.: 002		EFFLUENT			
		CONCENTRATION *(ppm)*		MASS *(lbs/day)*	
POLLUTANT	MQL* *(ug/l)*	Monthly Average	Daily Maximum	Monthly Average	Daily Maximum
PESTICIDES & PCB'S - EPA Method 608 required					
aldrin	0.05	N/A			
Aroclor 1016 (PCB-1016)	1.0				
Aroclor 1221 (PCB-1221)	1.0				
Aroclor 1232 (PCB-1232)	1.0				
Aroclor 1242 (PCB-1242)	1.0				
Aroclor 1248 (PCB-1248)	1.0				
Aroclor 1254 (PCB-1254)	1.0				
Aroclor 1260 (PCB-1260)	1.0				
alpha-BHC	0.05				
beta-BHC	0.05				
delta-BHC	0.05				
gamma-BHC	0.05				
chlordane	0.2				
4,4'DDT	0.1				
4,4'DDE	0.1				
4,4'DDD	0.1				
dieldrin	0.1				
alpha-endosulfan	0.1				
beta-endosulfan	0.1				
endosulfan sulfate	0.1				
endrin	0.1				
endrin aldehyde	0.1				
heptachlor	0.05				
heptachlor epoxide	0.05				

OUTFALL NO.: 002		EFFLUENT			
		CONCENTRATION *(ppm)*		MASS *(lbs/day)*	
POLLUTANT	MQL* *(ug/l)*	Monthly Average	Daily Maximum	Monthly Average	Daily Maximum
toxaphene	5.0	N/A			
2,4-dichlorophenocyacetic acid (2,4-D)	---	↓			
2-(2,4,5-trichlorophenoxy) propionic acid	---				
2,3,7,8-tetrachlorodibenzo-p-dioxin - use EPA Method 1613	10 ppq	↓			

OUTFALL NO.: 002		EFFLUENT			
		CONCENTRATION *(ppm)*		MASS *(lbs/day)*	
POLLUTANT	MQL* *(ug/l)*	Monthly Average	Daily Maximum	Monthly Average	Daily Maximum
METALS, CYANIDE, AND TOTAL PHENOLS - use EPA Approved Method					
Antimony, Total	60	< .004			
Arsenic, Total	10	0.01			
Beryllium, Total	5	< 0.01			
Cadmium, Total	1	0.002			
Chromium, Total	10	0.027			
Chromium, Hexavalent	10	0.07			
Copper, Total	10	0.008			
Lead, Total	5	< 0.01			
Mercury, Total	0.2	0.0007			
Nickel, Total [Marine]	5	N/A			
Nickel, Total [Freshwater]	40	0.04			
Selenium, Total	5	< 0.01			
Silver, Total	2	0.055			
Thallium, Total	10	< 0.01			
Zinc, Total	20	0.052			
Cyanide, Total	20	< 0.001			
Cyanide, Free	--	< 0.001			
Phenols, Total	5	0.014			

OUTFALL NO.: 002		EFFLUENT			
		CONCENTRATION *(ppm)*		MASS *(lbs/day)*	
POLLUTANT	MQL* *(ug/l)*	Monthly Average	Daily Maximum	Monthly Average	Daily Maximum
ADDITIONAL METALS, IF EXPECTED TO BE PRESENT - Use EPA Approved Method					
Aluminum, Total	--	<0.01			
Barium, Total	--	<0.01			
Boron, Total	--	0.10			
Cobalt, Total	--	<0.001			
Iron, Total	--	2.39			
Iron, Dissolved	--	2.32			
Magnesium, Total	--	0.79			
Manganese, Total	--	0.04			
Molybdenum	--	<0.01			
Tin, Total	--	<0.01			
Titanium, Total	--	<0.01			

* Minimum Quantification Level (MQL).

APPENDIX C

Pollutant	Maximum Concentration Observed ug/l
Copper	31
Zinc	13
Dichlorobromomethane	33
Chloroform	10

These pollutants are at very low concentrations which are far below accepted treatability levels.

Status of Regulations

BPT regulations (40 CFR 415.182) were promulgated on March 12, 1974. These regulations have since been remanded by the court.

BAT and NSPS regulations requiring zero discharge (40 CFR 415.183) were promulgated on March 12, 1974. These regulations have been since remanded by the court. However, it has been determined that the sodium metal subcategory be excluded from BAT and NSPS regulations because data from Section 308 letters and sampling surveys indicate that toxic pollutant concentrations are far below accepted treatable levels.

Because no significant quantities of toxic pollutants are present, no further effort will be given to development of pretreatment regulations for this subcategory.

Sodium Silicate

Summary of Determinations

It has been determined that no further effort be given to developing BPT, BAT, NSPS, and Pretreatment regulations for the Sodium Silicate Subcategory. The basis for this determination is that the small quantities of toxic pollutants found during screening are below accepted levels of treatability. This subcategory is excluded under Paragraph 8 of the Settlement Agreement.

Production Processes and Effluents

Sodium silicate is manufactured both in liquid and anhydrous powdered form. It has many industrial uses, such as additives in adhesives, flocculants, and cleaning agents. It is also used in the production of soap and household detergents. Sources of process wastewater include contact cooling water, filter backwash, gas scrubbers and tank cleaning.

The industry profile for this subcategory is given in Table 26.37-1.

Pollutants

Data has been received on about 63 percent of the industry as a result of Section 308 letters. In addition, a sampling survey was made at one plant which represents about 6 percent of the industry. The following pollutants were detected: nickel, copper, and zinc. These levels are below accepted treatability levels. In addition, the sampling data was taken from wastewaters receiving insufficient treatment. The wastes were ponded to remove suspended solids consisting essentially of sand and other silicates. Normally the pH of the wastes would be lowered to 9 and receive additional settling. However the dissolved silicate and high pH are considered beneficial by sewerage authorities in the removal of solids in primary and secondary settling systems.

Maximum concentrations of toxic pollutants found during sampling are:

Pollutant	(ug/l)
Copper	347
Nickel	121
Zinc	181

Status of Regulations

BPT, BAT, and NSPS regulations (40 CFR 415.192) requiring zero discharge of pollutants were promulgated on March 12, 1974. These regulations have since been remanded by the court and are not in effect.

Because no significant quantities of toxic pollutants are present, no further effort will be given to development of pretreatment regulations for this subcategory.

Sodium Silicofluoride

Summary of Determinations

This subcategory has been excluded from the present study but will be included in the Phase II, Inorganic Chemicals, review.

Production Processes and Effluents

Sodium silicofluoride is used in the manufacture of sodium fluoride and in the light metal industry as a protective agent. It is also used as an insecticide, as a fluxing and opacity agent for ceramics and in detergent products.

The industry profile for this subcategory is given in Table 26.38-1.

TABLE 26.37-1 - SUBCATEGORY PROFILE DATA SUMMARY

SUBCATEGORY SODIUM SILICATE

Total subcategory capacity rate (27 Plants)	927,300	kkg/year
Total subcategory production rate	NA	
Number of plants in this subcategory	39	
308 Data on file for	21	
With total capacity of	NA	
With total production of	431,000	kkg/year
Representing capacity	47	percent
Representing production	NA	
Plant production range:		
Minimum	12,400	kkg/year
Maximum	57,300	kkg/year
Average production	NA	
Median production	NA	
Average capacity utilization	NA	
Plant age range:		
Minimum	7	years
Maximum	43	years
Waste water flow range:		
Minimum	NA	
Maximum	NA	
Volume per unit product:		
Minimum	NA	
Maximum	NA	

Sources of data are Stanford Research Institute, Directory of Chemical Producers, U.S.A., 1979, U.S. Department of Commerce, Current Industrial Reports, December 1977; Energy and Environmental Analysis, Inc.; Draft Report, "Preliminary Economic Assessment of Effluent Limitations in the Inorganic Chemical Industry," June, 1978 and "Economic Analysis of Proposed Revised Effluent Guidelines and Standards for the Inorganic Chemicals Industry," March, 1980

NA = Not Available